

# **GSAS v3.8 Release Notes**

**GSAS Team**  
**February 10, 2004**

## **Introduction**

GSAS 3.8 contains fixes and minor modifications for L1A, Atmosphere, Waveform, and Elevation processes and products.

For L1A, the following changes were made:

- Improved GLA03 Quality Assurance Product (QAP).
- Added check to skip ancillary science packets if specific shot times = 0.
- Updated APID data structures to correspond with GLAS-582-SPEC-005-IPS45.xls
- Fixed errors and made general improvements in the GLA02 processing code, including using Pin E data for normalization of 532 laser energy data.
- Changed GLA02 transmit energy to 40/second.
- Fixed problem causing error when QAP04 was created.

For Waveforms, the following changes were made:

- Improved QAP05.
- Two parameters previously set invalid were redefined as spares

For Elevation processes, the following changes were made:

- Iceberg elevation parameter in GLA13 is now computed – it was previously set to invalid. This is computed blindly everywhere there are multiple peaks to the return, no sanity check is made to make sure it is not over land.

For Atmosphere, the following changes were made:

- Fixed beam\_coelev and beam\_azimuth on GLA08-11.
- Placed pad\_angle on GLA08-11.
- Made major changes to the background computation.
- Improved layer threshold computations.

Other, more general fixes include:

- GLAS\_Tick, a new PGE, was delivered to create oscillator rate trend files.
- Production documentation was updated/fixed.
- Significant changes were made to the QA and browse products.
- Metadata files were updated to work with ESDT changes.

## **Product Format/Definition Change Summary**

### **GLA01:**

- minor modifications on engineering data descriptions
- update documentation for RecNRGLast\_EU

### **GLA03:**

- Replaced existing spare55)ilb(8,4) with:
  - CD\_PWaccum i4b(4)
  - CD\_PWlong ilb(4)
  - CD\_PWshort ilb(4)
  - CD\_PWmsb ilb(4)
- changed spare55\_4 ilb(8,4) to ilb(1,4)

### **GLA05:**

- spare1.1 (previous pentsat1) chg to spare7
- spare1.2 (previous pctnsat2) chg to spare8

### **GLA08-11:**

- Replaced existing spare, spare0 ilb(56) with:
  - PAD Angle pad\_angle i4b(4)
- changed spare spare0 ilb(56) to ilb(40)

The latest product formats/descriptions will be available at  
[http://glas.wff.nasa.gov/v38\\_products/](http://glas.wff.nasa.gov/v38_products/).

## **Known Problems**

GLA16 still not supported.

Additional parameters need to be added to QAP03.

LRS subject change algorithm needs to be implemented.

SIRU sample time correction algorithm needs to be implemented.

More atmosphere changes are pending.

QAP05 lists all waveforms as always valid – this is a mistake- probably in the total number of waveforms

Lots of other QA tweaks needed.

## **Release Information**

The ClearCase label for this release is RELEASE\_3.8.

The release date is February 10, 2004.

Version numbers have been updated to "V3.8 February 2004" for the following:

- all libraries
- GLAS\_L1A
- GLAS\_Alt
- GLAS\_Atm
- GLAS\_Meta
- anc07\_02
- anc07\_05
- anc45\_01-15
- anc46\_xx (see item 0001024)

This should be verified during operation by checking the version information in the appropriate ANC06 files.

## SMDS Impact

The distribution tarfile is on [glasdev.wff.nasa.gov](http://glasdev.wff.nasa.gov) at the following location:

`/glasdev1/v3/dist/gsas_v3.8.tar.Z.`

### ANC Files

New versions of all the ANC07\_02, ANC07\_05, ANC45 and ANC46 data files are required.

### New PGE

GLAS\_Tick, a new PGE, is now provided. It should be run after the L1A process is completed and an ANC09 file is received. A new section has been added to the GSAS User Guide detailing the PGE.

### Compilation

All libraries and binaries should be recompiled using the top-level Makefile.

**IMPORTANT: due to internal changes in the makefiles, SDMS MUST use the command "make runtime" to ensure the software is made without debug flags.**

The process for making the libraries and binaries is as follows (**NOTE: SDMS ONLY!!**)

```
cd /install_dir/gsas_v3.8
make runtime
make install
```

**Note : developers should not use the above procedure. This procedure is for SDMS only!**

## Detailed Change Notes

### **0001264: maximum value of received energy needs to be higher change 20000 to 200000**

GLA01\_Main parameters i\_RecNrgAll\_EU and i\_RecNrgLast\_EU, max values have been changed from 2000 attojoules to 200000 attojoules in the product database documentation.

### **0001261: QABrowse problems**

Fixed problem with case of the file extension on HDF output files. Fixed various problems seen in GSAS 3.8b2 ACCTEST products.

### **0001246: Bad APID19 record after MEU reset causes time problems**

A new sanity check was introduced into GLAS\_L0p which checks that the following shot counters are > 0 and < 200. The record is skipped if the test fails.

i\_SCPosPktShot (Shot count for SC pos Pkt)

shot(j)%i\_ctr ( Shot count)

### **0001243: Update Product Release Numbers in ANC45**

The product release numbers were updated in ANC45 to Release 15.

### **00001218: Invalid Co-elevation angle on GLA10-11 and addition of pad\_angle to GLA10-11**

A software oversight was corrected which now allows the parameters beam\_coelev and beam\_azimuth to be propagated from GLA07 to products GLA08 through GLA11. In addition, software additions were made which place the pad\_angle into products GLA08-GLA11. Online documentation has been modified to reflect this addition.

### **0001205: QAP04 caused EOF condition in some cases with ANC09**

A single line of code got deleted out of L1A\_QAP\_mod.f90. This line initialized a variable which checked for the end of granule condition on QAP04. I have put this line back in.

### **0001204: ANC file ESDTs**

Updated version numbers for the following ANC files:

GLAANC04 rel 5

GLAANC08 rel 5

GLAANC09 rel 9

GLAANC20 rel 4

GLAANC25 rel 5

GLAANC26 rel 1

GLAANC33 rel 7

GLAANC37 rel 3

GLAANC39 rel 4

### **0001193: Update GLA01 Documentation for i\_RecNRGLast\_EU**

GLA01\_Main variable i\_recNRGLast\_EU has been changed. Name Field and Description has been corrected to read per above instructions.

### **0001177: Normalization of 532 by Pin A in GLA02 problem**

The change to the use of Pin E instead of Pin A for laser energy normalization in GLA02 will result in the removal of spurious signal intensity fluctuations introduced by the incorrect Pin A values. This will increase the quality of GLA07 and subsequent atm data products.

The background computation change should produce a more stable and reliable background subtraction that will increase the signal to noise of the daytime data.

The offsets applied to the range to the top of the profile (d\_Rng2PCProf and d\_Rng2CDProf) will increase the vertical alignment accuracy in GLA07. Prior versions of GLA07 had about a 2 bin (150 m) error in the vertical alignment of the data within the GLA07 height reference frame. This fix will also result in more accurate cloud and aerosol top and bottom (GLA08 and GLA09).

Additional changes made on cr1177:

L\_Atm\_mod.f90:

- major change made to background computation. A one second average background is computed from the average of the first 100 bins of the 20-40 km profile minus an assumed molecular backscatter contribution (a constant).
- Dead time correction change to 532 channel. New version first subtracts the background from received signal and dead time corrects the result.
- Valid raw data limits changed for 1064 channel. Prior versions required raw 1064 data to be  $\geq 0$  and  $\leq 255$ . This was changed to  $\geq -255$  and  $\leq 500$  to accommodate the fact that the droop correction will alter raw data values to this extent.

AtmMgr\_mod.f90:

- The biases applied to GLA02%d\_Rng2PCProf and GLA02%d\_Rng2CDProf had incorrect sign. Changed them to +206.8 and + 130.0, respectively.

A\_20s\_aer\_det\_mod.f90: (Actually done and merged from branch cr717 by mistake)

- Layer threshold computation changed to reduce occurrence of false positives.

A\_4s\_1064\_det\_mod:

- Layer threshold computation changed to increase effectiveness of finding layers.

A\_pbl\_det\_mod: (Actually done and merged from branch cr717 by mistake)

- Added invalid data check.

A\_20s\_1064\_det\_mod.f90:

- Layer threshold computation changed to reduce occurrence of false positives.  
Layer threshold computation changed to increase effectiveness of finding layers.  
Added invalid data check to fix IEEE overflow problem.

A\_cld\_lays\_mod.f90, A\_cld\_det\_mod.f90 and A\_cld\_grd\_det\_mod.f90:

- Changes to threshold computations to reduce false positives.

Anc07\_0002.dat:

- Changed GI\_AER\_TOP\_HT from 36000 to 30000. This is start height for aerosol layer searches.
- Changed GI\_CC\_ELIM\_F from 1 to 0. This is the flag to eliminate calibration points taken during daylight. 1 eliminates them, 0 will include them.
- Changed GI\_CALC\_AER\_F from 1 to 0. This flag determines which routine is used to find aerosol layers. 1 = use A\_20s\_aer\_det; 0 = use A\_cld\_lays\_mod

Const\_atm\_mod.f90:

- Changed gi\_cal\_ht\_hi from 26000 to 23000. This is the height of the center of the high calibration band used for 532 calibration.

### **0001155: ANC09 data selector for GPS data**

Created new PGE, GLAS\_Tick, to create output files from ANC09/ANC32 and GLA03. The resulting outputs will be used for oscillator frequency monitoring. The User Guide has been updated with a new section for this PGE.

### **0001152: Change needed in QAP02 data structure**

The GLA02 QAP files have been given an enhancement which provides more granularity in the energy distribution histograms.

### **0001122: QAP02 updates required to BROWSE software**

Inspected new GLA02 QAP data and find it conforms to expectations from code changes made in Fortran which produces data for QAP. Plots are attached.

### **0001072: WF QA Needs To Be Updated**

Updated QAP05 to include iQA100pLSat (percent of packet with low-gain saturation), iQA100pHSat (percent of packet with high-gain saturation), and iQA100pHFSat (percent of packet with high-gain sat+forward scattering) in the along track average, and i\_pcntLSat (percent of granule with low-gain saturation), i\_pcntHSat (percent of granule with high-gain saturation), and i\_pcntHFSat (percent of granule with high-gain sat + forward scattering) in the QA summary record. Initialized all variables to invalid. Corrected problem in calculation of (WF centroid - centroid of max-amp peak).

Corrected QA code to gather skewness and kurtosis data only for WFs with one peak. Updated qapg code to include the new saturation flags. Changed min & max values for histograms of solution sigmas, standard deviation of fit, and (WF centroid - max-amp peak centroid).

#### **0001071: GLA13 BergElev not set**

Iceberg elevation parameter in GLA13 was previously not set in the code and had all default values. An initial algorithm has been implemented to compute this height. Although values are now available, they are very sparse. Fine-tuning of the algorithm is anticipated. NOTE: GLA13 includes some land. Iceberg elevation is still computed and reported wrongly for these land flagged data.

#### **0001069: 532 Channel Background Computation**

See 0001177.

#### **0001068: GLA13 GLA02 QA tweaks**

The QAP output for GLA02 has improved resolution for the energy histograms and a minor correction to the expected/processed counts.

#### **0000960: Valid lat/lon produces invalid DEM elevation**

The conditions cited by Jeff are only an explainable anomaly and do not constitute an error. Elevations runs show that the interval in question occurs over a coordinate range of roughly -77.7 lat / 184.6 lon through -82.8 lat / 169.0 lon. The DEM elevations are indeed invalid as reported; however, the entire interval occurs over the Ross Ice Shelf. At the end of the interval the DEM elevations become valid, as expected over the true Antarctic land mass. The etopo30 DEM used as of this entry records an ice shelf as being over ocean, and not land. There is no software or data error.

#### **0000952: \_pcnts1, i\_pcnts2 Should Be Changed To Spares**

Changed \_pcntSat1 & \_pcntSat2 to \_spare7 & \_spare8. Changes to qapg (to display saturation data from wfQual) should be done on another branch.

GLA05%i\_pcnts1 and GLA05%i\_pcnts2 have been changed to GLA05%i\_spare7 and GLA05%i\_spare8. The online documentation was updated by Dennis and confirmed by LeeAnne Roberts. Code changes confirmed by Steve McLaughlin.

#### **0000943: GLA01 engineering data needs to define values**

Added the following comments in the description:

```
d_engineering(1) = active detector temperature [T_detID
    if detector=1, T_detID = GLA00_prod%CTHW3_hk(1)%i_PRTad1C24_t
    if detector=2, T_detID = GLA00_prod%CTHW3_hk(1)%i_PRTad2C25_t]
d_engineering(2) = active digitizer temperature [T_digID
    if digitizer=1, T_digID = GLA00_prod%CTHW3_hk(1)%i_AD1ADCC19_t
```

if digitizer=2, T\_digID = GLA00\_prod%CTHW3\_hk(1)%i\_AD2ADCC20\_t]  
d\_engineering(3) = oscillator board temperature  
[T\_relay = GLA00\_prod%CTHW3\_hk(1)%i\_OscBdC11\_t]  
d\_engineering(4) = Fiber Box temperature  
[T\_fb = GLA00\_prod%CTHW3\_hk(1)%i\_PRTfbboxC29\_t]  
d\_engineering(5) thru d\_engineering(12) TBD. All temperatures are in Celsius X 100.

### **0000903: GLAS 532 nm PBL and Aerosol Layer Heights (GLA08)**

See 0001177

### **0000902: GLAS 532 nm Cloud Layer Heights (GLA09)**

Changes to threshold computations to reduce false positives were made in the following files: A\_cld\_lays\_mod.f90, A\_cld\_det\_mod.f90 and A\_cld\_grd\_det\_mod.f90:

### **0000779: WFMgr on integration branch crashes with out of bounds error**

When I ran this using LeeAnne's setup, the error did not occur. Thus, this appears to be due to an error in the configuration file. Can't reproduce the problem.

### **0000752: GLAS telemetry changes**

GLA00 changes detected are as follows (APID55 only):

```
< integer (kind=i1b) :: i_spare50_4(8) !Spare in telemetry
---
> integer (kind=i4b) :: iCD_PWaccum !CD PW Limit Violation counter
> integer (kind=i1b) :: iCD_PWlong !CD Long PW Violation counter
> integer (kind=i1b) :: iCD_PWshort !CD Short PW Violation counter
> integer (kind=i1b) :: iCD_PWmsb !CD Short PW MSB
> integer (kind=i1b) :: i_spare50_4(1) !Spare in telemetry
```

Made documentation changes to the Product Database for GLA03. The changes are:

```
integer (kind=i1b) :: i_spare55_4 (8,4)<---replace
integer (kind=i4b) :: iCD_PWaccum (4)<---New addition
integer (kind=i1b) :: iCD_PWlong (4)<---New addition
integer (kind=i1b) :: iCD_PWshort (4)<---New addition
integer (kind=i1b) :: iCD_PWmsb (4)<---New addition
integer (kind=i1b) :: i_spare55_4 (1,4)<---changed size
```



### **0000717: GLAS\_Atm is generating an IEEE overflow for certain data**

The IEEE overflow was traced to a line of code in A\_20s\_1064\_det\_mod.f90 that computed the average and standard deviation of a few km of atmospheric profile. If all the bins in this few km were invalid, the std deviation was calculated as invalid. The std deviation was then used to compute a threshold and this would cause the overflow. A check on the magnitude of the std deviation was added to catch this condition.

### **0000673: running without pad and pod in for elevation mgr gives different results**

Running elevations without the PAD and POD now provides effectively the same results as running with them, provided that the PAD and POD are the same ones used when generating the original GLA05 with waveforms software.

### **0000665: L1A Transmit energy per shot**

Modified L1A to calculate transmitted energy (for GLA02) at 40Hz instead of repeating the value for shot 1 forty times.

### **0000611: GLA05 QA problems in Release 11+**

Updated QAP05 to include iQA100pLSat (percent of packet with low-gain saturation), iQA100pHSat (percent of packet with high-gain saturation), and iQA100pHFSat (percent of packet with high-gain sat+forward scattering) in the along track average, and i\_pcntLSat (percent of granule with low-gain saturation), i\_pcntHSat (percent of granule with high-gain saturation), and i\_pcntHFSat (percent of

granule with high-gain sat + forward scattering) in the QA summary record. Initialized all variables to invalid. Corrected problem in calculation of (WF centroid - centroid of max-amp peak). Corrected QA code to gather skewness and kurtosis data only for WFs

with one peak. Updated qapg code to include the new saturation flags. Changed min & max values for histograms of solution sigmas, standard deviation of fit, and (WF centroid - max-amp peak centroid).

### **0000601: Unexpected latitudes in GLA12-15 along-track records**

This problem is apparently resolved on the integration branch. For a GLA12 qap file generated on the main branch only,

```
IDL> data=qapread('/home/jack/GLA12_012_1102_002_0021_0_01_main_0001.qap')
```

```
IDL> print,min(abs(data.alongtrack.dqa100lat))
```

```
37.384362
```

whereas the same run using code from integration gives

```
IDL> data=qapread('/home/jack/GLA12_012_1102_002_0021_0_01_integ_0001.qap')
```

```
IDL> print,min(abs(data.alongtrack.dqa100lat))
```

```
69.044922
```

It is not clear which change fixed this problem. None of the ones listed in the history for elevmgr\_mod.f90 since the last change on main address it directly.

#### **0000518: Inconsistent/incorrect determination of end of QAP averaging period: GLA05**

The production of the GLA05 QAP file was amended so that it utilizes standard timing software employed for other GLA QAP products.

#### **0000501: GLA01 QA averages include bad data**

GLA01 QAP data has been updated to remove statistics based on spurious additions from invalid records, thus improving the accuracy and validity of the QA data available.

#### **0000430: Global avg std dev set to invalid if all values of parameter are the same**

A/D receiver gain statistics are now available in the GLA01 QAP file.

#### **Changed ANC07 Parameters:**

ANC07\_02

changed GI\_AER\_TOP\_HT from 36000 to 30000

changed GI\_CALC\_AER\_F from 1 to 0

changed GI\_CC\_ELIM\_F from 1 to 0

ANC07\_05

changed GI\_G\_USEDDBG from 2 to 1

changed GD\_IR\_MAXLID from 255 to 500

Added D\_QA\_G\_NRG\_HIST and D\_QA\_IR\_NRG\_HIST

Removed D\_QA\_NRG\_HIST

#### **Changed Files:**

./data/anc07\_001\_01\_0002.dat

./data/anc07\_001\_01\_0005.dat

./data/anc45\_001\_01\_0001.dat

./data/anc45\_001\_01\_0002.dat

./data/anc45\_001\_01\_0003.dat

./data/anc45\_001\_01\_0004.dat

./data/anc45\_001\_01\_0005.dat

./data/anc45\_001\_01\_0006.dat

./data/anc45\_001\_01\_0007.dat

./data/anc45\_001\_01\_0008.dat  
./data/anc45\_001\_01\_0009.dat  
./data/anc45\_001\_01\_0010.dat  
./data/anc45\_001\_01\_0011.dat  
./data/anc45\_001\_01\_0012.dat  
./data/anc45\_001\_01\_0013.dat  
./data/anc45\_001\_01\_0014.dat  
./data/anc45\_001\_01\_0015.dat  
./data/anc46\_001\_01\_0004.dat  
./data/anc46\_001\_01\_0008.dat  
./data/anc46\_001\_01\_0009.dat  
./data/anc46\_001\_01\_0020.dat  
./data/anc46\_001\_01\_0025.dat  
./data/anc46\_001\_01\_0026.dat  
./data/anc46\_001\_01\_0033.dat  
./data/anc46\_001\_01\_0037.dat  
./data/anc46\_001\_01\_0039.dat  
./idl/qa\_browse/browse/qab\_gndtrkmap.pro  
./idl/qa\_browse/browse/qab\_outputfilename.pro  
./idl/qa\_browse/browse/qab02.pro  
./idl/qa\_browse/browse/qab02\_lowerlevelplots.pro  
./idl/qa\_browse/browse/qab02\_upperlevelplot.pro  
./idl/qa\_browse/browse/qab05.pro  
./idl/qa\_browse/browse/qab05\_gndtrkmapclose.pro  
./idl/qa\_browse/browse/qab05\_groundtrackmaps.pro  
./idl/qa\_browse/browse/qab05\_histograms.pro  
./idl/qa\_browse/browse/qab05\_lowerlevelplots.pro  
./idl/qa\_browse/browse/qab05\_plottable.pro  
./idl/qa\_browse/browse/qab05\_upperlevelplot.pro  
./idl/qa\_browse/browse/qab05\_writetabletoplot.pro  
./idl/qa\_browse/browse/qab13and15\_upperlevelplot.pro  
./idl/qa\_browse/browse/qabrowse.pro

```
./idl/qa_browse/compare/qapcompare.pro
./idl/qa_browse/read/qapread.pro
./idl/qa_browse/util
./idl/qa_browse/util/hdf2png.pro
./idl/qa_browse/util/qab_translatecomponentstatus.pro
./idl/qa_browse/util/qap02V2_datastruct.pro
./idl/qa_browse/util/qap05_datastruct.pro
./idl/qa_browse/util/qap05V2_datastruct.pro
./idl/qa_browse/util/strprint.pro
./idl/qa_browse/util/tvread2.pro
./Makefile
./src
./src/atm_lib/vers_atm_mod.f90
./src/atmosphere/common/A_buff_data_mod.f90
./src/atmosphere/layers/A_20s_1064_det_mod.f90
./src/atmosphere/layers/A_20s_aer_det_mod.f90
./src/atmosphere/layers/A_4s_1064_det_mod.f90
./src/atmosphere/layers/A_cld_det_mod.f90
./src/atmosphere/layers/A_cld_grd_det_mod.f90
./src/atmosphere/layers/A_cld_lays_mod.f90
./src/atmosphere/layers/A_pbl_det_mod.f90
./src/atmosphere/layers/A_pbl_lay_mod.f90
./src/atmosphere/opt_props/A_cld_opt_prop_mod.f90
./src/common_libs/anc_lib/anc07_11a_mod.f90
./src/common_libs/anc_lib/anc32_gps_mod.f90
./src/common_libs/anc_lib/vers_anc_mod.f90
./src/common_libs/cntrl_lib/vers_cntrl_mod.f90
./src/common_libs/err_lib/vers_err_mod.f90
./src/common_libs/exec_lib/fCntl_mod.f90
./src/common_libs/exec_lib/get_fileindex_mod.f90
./src/common_libs/exec_lib/vers_exec_mod.f90
./src/common_libs/file_lib/vers_file_mod.f90
```

./src/common\_libs/geo\_lib/vers\_geo\_mod.f90  
./src/common\_libs/Makefile  
./src/common\_libs/math\_lib/c\_minmaxmean\_mod.f90  
./src/common\_libs/math\_lib/vers\_math\_mod.f90  
./src/common\_libs/platform\_lib/const\_atm\_mod.f90  
./src/common\_libs/platform\_lib/const\_glob\_mod.f90  
./src/common\_libs/platform\_lib/const\_l1a\_mod.f90  
./src/common\_libs/platform\_lib/vers\_platform\_mod.f90  
./src/common\_libs/prod\_lib/GLA00\_alg\_mod.f90  
./src/common\_libs/prod\_lib/GLA00\_mod.f90  
./src/common\_libs/prod\_lib/GLA00\_prod\_mod.f90  
./src/common\_libs/prod\_lib/GLA00\_scal\_mod.f90  
./src/common\_libs/prod\_lib/GLA02\_Pass\_mod.f90  
./src/common\_libs/prod\_lib/GLA03\_alg\_mod.f90  
./src/common\_libs/prod\_lib/GLA03\_print\_mod.f90  
./src/common\_libs/prod\_lib/GLA03\_prod\_mod.f90  
./src/common\_libs/prod\_lib/GLA03\_scal\_mod.f90  
./src/common\_libs/prod\_lib/GLA05\_alg\_mod.f90  
./src/common\_libs/prod\_lib/GLA05\_print\_mod.f90  
./src/common\_libs/prod\_lib/GLA05\_prod\_mod.f90  
./src/common\_libs/prod\_lib/GLA05\_scal\_mod.f90  
./src/common\_libs/prod\_lib/GLA07\_alg\_mod.f90  
./src/common\_libs/prod\_lib/GLA07\_prod\_mod.f90  
./src/common\_libs/prod\_lib/GLA07\_scal\_mod.f90  
./src/common\_libs/prod\_lib/GLA08\_alg\_mod.f90  
./src/common\_libs/prod\_lib/GLA08\_prod\_mod.f90  
./src/common\_libs/prod\_lib/GLA08\_scal\_mod.f90  
./src/common\_libs/prod\_lib/GLA09\_alg\_mod.f90  
./src/common\_libs/prod\_lib/GLA09\_prod\_mod.f90  
./src/common\_libs/prod\_lib/GLA09\_scal\_mod.f90  
./src/common\_libs/prod\_lib/GLA10\_alg\_mod.f90  
./src/common\_libs/prod\_lib/GLA10\_prod\_mod.f90

./src/common\_libs/prod\_lib/GLA10\_scal\_mod.f90  
./src/common\_libs/prod\_lib/GLA11\_alg\_mod.f90  
./src/common\_libs/prod\_lib/GLA11\_prod\_mod.f90  
./src/common\_libs/prod\_lib/GLA11\_scal\_mod.f90  
./src/common\_libs/prod\_lib/vers\_prod\_mod.f90  
./src/common\_libs/time\_lib/vers\_time\_mod.f90  
./src/create\_dem  
./src/dem2vis  
./src/elev\_lib  
./src/elevations  
./src/elevations/anc09\_pad\_mod.f90  
./src/glas\_alt/ElevMgr\_mod.f90  
./src/glas\_alt/GLAS\_Alt.f90  
./src/glas\_alt/WFMgr\_mod.f90  
./src/glas\_apid/GLAS\_APID.f90  
./src/glas\_atm/AtmMgr\_mod.f90  
./src/glas\_atm/GLAS\_Atm.f90  
./src/glas\_l0p/GLAS\_L0proc.f90  
./src/glas\_l0p/glop\_mod.f90  
./src/glas\_l1a/GLAS\_L1A.f90  
./src/glas\_l1a/L1A\_QAP\_mod.f90  
./src/glas\_meta/GLAS\_Meta.f90  
./src/glas\_reader/GLAS\_Reader.f90  
./src/glas\_tick/eCntl\_mod.f90  
./src/glas\_tick/GetControl\_mod.f90  
./src/glas\_tick/GLAS\_Tick.f90  
./src/glas\_tick/Makefile  
./src/glas\_tick/ReadTickData\_mod.f90  
./src/glas\_tick/TickGranule\_mod.f90  
./src/glas\_tick/TickHdr\_mod.f90  
./src/glas\_tick/TickStats\_mod.f90  
./src/l1a\_lib/L\_Alt\_mod.f90

./src/l1a\_lib/L\_Atm\_mod.f90  
./src/l1a\_lib/L\_Eng\_mod.f90  
./src/l1a\_lib/QAP01\_mod.f90  
./src/l1a\_lib/QAP02\_mod.f90  
./src/l1a\_lib/vers\_l1a\_mod.f90  
./src/Makefile  
./src/prod\_util/product\_test/gla05\_minmax\_mod.f90  
./src/prod\_util/scantime/scantime.f90  
./src/qapg/qapg\_gla05\_at.f90  
./src/qapg/qapg\_gla05\_mod.f90  
./src/qapg/qapg\_gla05\_sum.f90  
./src/reforbit\_util/c\_procRefOrbit\_mod.f90  
./src/waveforms/W\_Assess/W\_Assess\_mod.f90  
./src/waveforms/W\_Common/QA\_wf\_mod.f90  
./src/waveforms/W\_Common/W\_Types\_mod.f90  
./src/waveforms/W\_CreQASStats/W\_CreQASStats\_mod.f90  
./src/waveforms/W\_FunctionalFt/W\_FunctionalFt\_mod.f90